

III. Remarks

Reconsideration of this application in light of the above amendments and the following remarks is requested.

Claims 1-20 were originally filed in the present application. Claims 7-9, 11-15, 17, and 18 were subsequently canceled without prejudice or disclaimer. New claims 21 and 22 are currently added, although it is not believed that these new claims introduce new subject matter not already present in the previously-pending claims, such that an additional search by the Examiner is not required.

Consequently, claims 1-6, 10, 16, and 19-22 are pending in the present application.

Claim Rejections Under 35 U.S.C. §102(b): Hill et al.

The Examiner has rejected claims 1-6, 10, 16, and 19 under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. 6,327,855, by Hill, et al. ("Hill"). Claim 1 recites:

1. A MEMS device, comprising:
 - a plurality of actuator layers formed over a substrate, including a first layer and a second layer;
 - a bimorph actuator having a substantially serpentine pattern, wherein the serpentine pattern is a staggered pattern having a plurality of static segments interlaced with a plurality of deformable segments, each of the plurality of static segments having a static segment length and each of the plurality of deformable segments having a deformable segment length, wherein the deformable segment length is substantially different than the static segment length, wherein at least a portion of each of the plurality of static segments is defined from the first layer, and wherein at least a portion of each of the plurality of deformable segments is defined from both of the first and second layers.

The PTO provides in MPEP §2131 that, to anticipate a claim, a reference must teach every element of the claim. Therefore, to sustain a §102(b) rejection of claim 1, Hill must teach every element of claim 1. However, Hill does not disclose that the serpentine pattern is a staggered pattern, among other elements of claim 1. That is, as described in the DETAILED DESCRIPTION of the present application, the staggered serpentine configuration has deformable segments that are longer or shorter than static

segments, such that the ends of adjacent deformable segments are offset in a direction substantially parallel to longitudinal axes of the deformable segments.

In contrast, with reference to Hill's Figs. 1 & 2 identified by the Examiner, Hill discloses a serpentine pattern where ends of adjacent deformable segments line up perpendicular to the longitudinal axes of the deformable segments. The ends of the adjacent deformable segments are not staggered or offset. Consequently, Hill fails to disclose a staggered pattern, as in the current claim 1, wherein ends of at least one deformable segment and an adjacent deformable segment are offset in a direction parallel to longitudinal axes of the deformable segments.

Therefore, the rejection is not supported by the Hill reference and should be withdrawn. Moreover, because claims 2-6, 10, 16, and 19 depend from and further limit claim 1, a §102(b) rejection of any of claims 2-6, 10, 16, and 19 is also not supported by Hill, and any such rejection should therefore be withdrawn.

Claim Rejections Under 35 U.S.C. §103(a): Hill

The Examiner has rejected claim 20 under 35 U.S.C. §103(a) as being unpatentable over Hill. Applicants traverse this rejection on the grounds that this reference is defective in establishing a *prima facie* case of obviousness with respect to claim 20 and also with respect to claim 1, upon which claim 20 depends.

As the PTO recognizes in MPEP §2142: "... The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the Examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness...." It is submitted that, in the present case, the Examiner has not factually supported a *prima facie* case of obviousness because Hill does not teach the claimed subject matter.

Hill cannot be applied to reject claim 1 under 35 U.S.C. §103, which provides that:

A patent may not be obtained ... if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains ... (Emphasis added)

Thus, when evaluating a claim for determining obviousness, all limitations of the claim must be evaluated. However, as shown above, Hill fails to disclose that the serpentine pattern is a staggered

pattern, as recited in claim 1. Consequently, it is impossible for Hill to render obvious the subject matter of claim 1, as a whole, and the explicit terms of the statute cannot be met.

In addition, with respect to claim 20, the Examiner asserts that because Hill's device discloses that the actuator has a patterned line width less than about 25 microns, it would have been obvious to one of ordinary skill in the art to arrive at an actuator having a patterned line width of less than about 1000 nanometers. That is, the Examiner notes that it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. However, 25 microns is significantly larger than 1000 nm.

Moreover, as provided in MPEP §2144.05, the law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). In this context, the BACKGROUND of the present application provides that "the amount of deflection and/or attainable range of electrical characteristics are becoming insufficient as device scaling continues and as device performance requirements steadily increase." Clearly, one skilled in the pertinent art would recognize from the present application that the decreased size of the actuator has a smaller footprint than those disclosed in Hill, yet the deflection, attainable range, and/or electrical characteristics remain in desirable ranges despite the smaller size. Such advantageous results are particularly evident of non-obviousness where, as here, the claimed range is 2500% smaller than the range disclosed in Hill (25 microns = 25,000 nm, which is 2500% larger than the presently claimed 1000 nm).

Thus, for this mutually exclusive reason, the Examiner's burden of factually supporting a *prima facie* case of obviousness has clearly not been met with respect to either of claim 1 or claim 20, such that the rejection of claim 20 under 35 U.S.C. §103(a) should be withdrawn.

New Claim 21

Claim 21 is the same as claim 20 after being rewritten in independent form including all of the limitations of the base claim, claim 1. Consequently, it is believed that claim 21 does not constitute newly-claimed subject matter, and therefore does not necessitate a new search by the Examiner. Moreover, in compliance with 37 CFR §1.116(b)(2), new claim 21 presents rejected claim 20 in better form for consideration on appeal. Therefore, Applicants respectfully request the Examiner admit the addition of new claim 21.

It is believed that new claim 21 is patentable over Hill because Hill fails to teach or suggest a serpentine pattern that is staggered, and also because Hill fails to teach or suggest a patterned line width of less than about 1000 nm, as described above.

New Claim 22


Claim 22 is substantially similar to claim 1, with the sole exception being that the definition of a “staggered serpentine pattern” from the DETAILED DESCRIPTION has been incorporated into the claim language. Consequently, it is believed that claim 22 does not constitute newly-claimed subject matter, and therefore does not necessitate a new search by the Examiner. Moreover, in compliance with 37 CFR §1.116(b)(2), new claim 22 presents rejected claim 1 in better form for consideration on appeal. Therefore, Applicants respectfully request the Examiner admit the addition of new claim 22.

It is believed that new claim 22 is patentable over Hill because Hill fails to teach or suggest a serpentine pattern that is staggered, as described above.

IV. Conclusion

It is believed that all matters set forth in the Office Action have been addressed. Consequently, favorable consideration and an early indication of the allowability of the claims are respectfully requested. Should the Examiner deem that an interview with Applicants' undersigned attorney would expedite consideration, the Examiner is invited to call the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

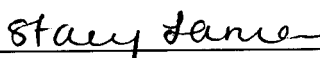

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